INQUERY: Inference Net Retrieval of Encounter Notes in an Automated Medical Record

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Harvard Community Health Plan (HCHP) is a large HMO, which has benefited from computerized medical records since its founding 25 years ago. The Automated Medical Record System (AMRS) of HCHP is a derivative of COSTAR IV and contains essentially the complete medical record more than 300,000 current members.

The data within AMRS is a strategic resource for both clinical and utilization management. The coded portions are used extensively. However, with the exception of resource-intensive manual chart review for quality measurement and research, the text portions of the AMRS resource are inaccessible and virtually ignored. HCHP has searched for ways to unlock this data and build into production systems the capacity to access, manipulate, extract and abstract text clinical data.

INQUERY is an advanced information retrieval system using an inference net model developed by the Information Retrieval Laboratory of Computer Science Dept. of the University of Massachusetts in Amherst. In order to better focus research in applied problem solving and to facilitate transfer to industry of technologies developed, the Computer Science Dept. established the National the Center for Intelligent Information Retrieval (CIIR), an NSF supported State-Industry-University consortium. HCHP has joined CIIR as a means of developing state-of-the-art tools for exploiting text data resources.

Asthma is the most common serious childhood illness and the greatest consumer of inpatient resources in children. Several quality improvement projects have been undertaken at HCHP concerning asthma care, one of which concerned the frequency and circumstances surrounding exacerbations. This study has a manual chart review component, part of which requires trained coders to identify AMRS encounter notes in which exacerbations are documented.

The question HCHP posed at CIIR was: **to what extent can an automated information retrieval system replace manual chart review of medical record encounter notes in support of quality measurement?** Specifically, can how well can INQUERY identify these 5% of all encounters of pediatric asthmatics which concern acute exacerbations.

This table-top demonstration will present the current release of the INQUERY engine accessed through both Windows and Macintosh interfaces, searching complete, sanitized AMRS records of HCHP members.

Features to be demonstrated include preprocessing of data files, SGML tagging, natural language query formulation, Boolean query formulation, AMRS encounter note retrieval, relevance feedback, query refinement, Phrase Finder automated query expansion system, interpretation of ranked document output, and recent results of experiments in classification of AMRS encounter notes. Hands on use of INQUERY will be encouraged.

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